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GENERAL VIEW OF THE PRINCIPAL MOUNTAINS IN THE WORLD.

AN ACCOUNT OF THE PRINCIPAL MOUNTAINS IN THE WORLD.

THOSE majestic elevations which are found upon the surface of the earth in almost every part of the world are termed MOUNTAINS; and the inequalities of lesser height are distinguished by the name of HILLS. When several mountains occur together, covering a plain, they are called *Groups*, and a series several miles in length is termed a *Chain*, or *Ridge*, of *Mountains*. Mountain Groups are generally highest in the middle. Each group constitutes a connected whole, both in regard to its base and its acclivity; but it is not an entire mass, being intersected in many places, though never quite down to its foot or base. *Mountainous Land*, is composed of single mountains collected into chains, but which, not being joined together by a central or high mountain chain, do not form groups. *Hilly Land* consists of rounded and undulated elevations; it is much lower than mountain land, and by means of the plains, which sometimes constitute a part of high land, forms a transition into low land.

The form of mountains is generally conical, that is, gradually tapering from the base upwards, and usually terminating in a more or less pointed peak. Some of the countries covered with high mountains present, in the summer, different climates at different elevations, within a very narrow compass. We may ascend gradually from flourishing and delightful vallies, decorated with corn, fruit trees and vines, to pastures covered with odoriferous alpine plants, and, near the declivities, with evergreens, and perceive the vegetation diminishing and dwindling as we advance, till, at last, all organic life ceases, and the cold prevents all further progress.

The first view of such amazing heights, (some of which are not less than five miles above the level of the sea, others four miles, and many two and three miles) leads to a belief that they must greatly detract from the regularity of the earth's spherical form: but on comparing them with the bulk of the earth, they sink into insignificancy, bearing in reality no greater proportion to it than a grain of sand would bear to an artificial globe of twelve inches diameter, or than the little risings on the rind of an orange bear to its fruit.

Mountains are supposed by naturalists to have different origins, and to date their commencements from various periods. I. Those which form a chain, and are covered with snow, are accounted primitive, or antediluvian, that is, to have existed before the Flood. They greatly exceed all other mountains in height; in general, their elevation is very sudden, and their ascent steep and difficult. Their shape is mostly pyramidal; they are crowned with sharp prominent rocks, from which the soil has been washed away by rain, presenting an awful and horrible aspect. Their sides are less steep, and they abound in thundering cascades, frightful precipices, and deep chasms or valleys. The depressions and excavations correspond with the quantity of water, the motion of which is quickened in its fall, and sometimes produces a sinking or inclination of the mountain. The wrecks to be found at the foot of most peaks, shew how much they have suffered from the hand of time. There the eye meets with enormous rocks, heaped upon each other in an almost inconceivable state of disorder and decay. On the summit of these mountains, which are only a series of peaks, frequently detached, the prominent rocks are covered with perpetual snow and ice, and surrounded by floating clouds, which are dispersed into dew. These primitive mountains are composed of vast masses of quartz, destitute of shells, and of all organized marine matter; and appear to descend almost perpendicularly into the body of the earth. In their interior there are natural caverns, abounding in crystallizations of great beauty, and various minerals; but no calcareous spar, except in the fissures or rents, which have some extent and an evident direction. Of this kind are the Pyrenees, the Alps, the Apenines, the Tyrolese and Carpathian mountains, with some others in Europe; the Riphæan Mountains, Caucasus, Taurus, Libanus, and the Himmaleh range, in Asia; Atlas, in Africa; and the Apalachian mountains, and the Andes or Cordilleras, in America.

II. Another class of mountains are of volcanic origin. These are either detached or surrounded with groups of lower hills, the soil of which is heaped up in disorder, and consists of gravel and other loose substances. Many of these mountains are truncated, or have a funnel-shaped opening towards their summits, which are composed of, and surrounded by, heaps of lava and half vitrified bodies, making their gradual increase by strata raised up and discharged into the air, upon occasions of the eruption of subterraneous fire. Such, among many others, are Mounts Ætna and Vesuvius, in Sicily and Naples; Adam's Peak, in the island of Ceylon; the Peak of Teneriffe, in the Canary Isles, &c. When very high mountains of this kind are covered with marine shells, their summits are supposed to have once constituted part of the bottom of the ocean. These mountains are usually more easy of access than those of the first class, and have fewer springs.

III. A third rank of mountains, whether isolated or disposed in a group, are such as are composed of stratified earth or stone, consisting of different substances, of various colours. These are produced by the slow deposits of water, or by soil gained in the time of great floods. Mountains of this kind are always of small elevation compared with those of the first order, and are round at the top, or covered with soil, frequently forming a pretty flat and extensive surface; on which are found sand and heaps of round pebbles, similar to those which have been exposed to the waves on the sea beach.

The interior of these mountains consists of numerous strata, almost horizontally disposed, containing shells, marine productions, and fish bones, in great quantities. These fossils are intermixed and confounded with heaps of organized bodies of another species, presenting a picture of surprising disorder, and affording indications that some extraordinary and violent inundation, such as the general Deluge, has accumulated in the greatest confusion and precipitation, foreign substances of very opposite qualities. Mountains of this class may be considered as composed of the wrecks of once organized bodies. In these mountains we likewise find wood, prints of plants, strata of clay, marl, and chalk; different beds of stone, succeeding each other, as slate, marble, (often full of sea shells,) plaster stone; and ochre, bitumen, mineral, salt and alum.

IV. The strata of mountains, which are lower and of more recent date, or formed by recent accidents, sometimes appear to rest upon, or to take their rise from the sides of primitive mountains, which they surround, and of which they form the first steps in the ascent; and they end by being insensibly lost in the plains. The strata of recent mountains are not always similar as to number and thickness; some are only a quarter of an inch thick, others more than ten feet. In some places, thirty or forty beds suc-

ceed each other; in others, only three or four. According to M. Lehmann, the lowest stratum is always pit coal, resting on a coarse iron gravel or sand. Above the pit coal are strata of slate, schistus, &c. &c. the upper part of the strata is occupied by lime stone and salt springs.

It has been frequently remarked that the east side of a mountain running from north to south, is comparatively low, sloping off into an extensive plain, while the west side is lofty, rugged, and broken. Those which stretch from east to west in their length, have their south side steeper than their north.

Baron Humboldt has pointed out a striking difference between the formation of the mountains in the eastern and western hemispheres. Mont Blanc and others of the highest Alps, rear their peaks of granite above the clouds: but in America, "the newest flœtztrap, or whinstone, which in Europe, appears only in low mountains, or at the foot of those of great magnitude, covers the mightiest heights of the Andes. Chimboraço and Antisana are crowned by vast walls of porphyry, rising to the height of 6000 or 7000 feet; while basalt, which, in our continent, has never been observed higher than 4000 feet, is, on the pinnacle of Pichincha, seen rearing aloft its crested steeps, like towers amidst the sky, Other secondary formations, as limestone, with its accompaniment of petrified shells and coal, are also found at greater heights in the New than in the Old World, though the disproportion is not so remarkable."

Of all the phenomena to which mountainous regions are subject, those of volcanoes are the most awful and sublime. They are not common to all mountains, but restricted to certain regions, where the convulsions they occasion occur at irregular intervals; as longer or shorter periods are required for preparing those immense masses of ignited materials and rivers of liquid fire, which commonly attend their fearful eruptions. When the phenomena occur beneath the sea, the substances thrown up sometimes rise above the surface of the waters, and form rocks and islands; as in the case of the Azores, Stromboli, and the Santorin islands. The situation of these terrific yet sublime features of nature is strikingly contrasted in the two hemispheres. In the Old World, they are chiefly found in islands and peninsular extremities; in the New, they are spread through the very heart of the continent. Some exceptions must however be made to this general rule. The principal chains of Europe, Asia, and Africa, also are destitute of volcanoes; but in America, many of the most stupendous ranges present an almost uninterrupted blaze. Nor are the substances thrown out by both series of volcanoes always alike: besides the common lava and stones of the European and Asiatic volcanoes, those of America throw up scorified clay, carbon, sulphur, and water, accompanied, in some instances, by numbers of boiled fishes.

The number of volcanoes at present known, according to Professor Jameson, is 195, distributed as follows:

European continent .	1	Asiatic islands . . .	58
——— islands . .	12	American continent .	97
Asiatic continent . .	8	——— islands . .	19

No volcano has yet been discovered on the continent of Africa; but most of its insular groups are distinguished by such phenomena. These the Professor has omitted in his estimate.

The summits of very high mountains, even in the warmest climates, are constantly covered with frozen snow, in consequence of the great rarefaction of the air. The line where perpetual frost commences, is not the same in all countries; being lowest towards the poles, and highest under the equator. At the poles it is level with the surface of the earth; from thence it rises in a curve to the altitude of 15,744 feet at the equator. Hence, in some countries, places are not only habitable, but even pleasant and comfortable at elevations, where, under other latitudes, neither animal nor vegetable life could exist, by reason of the intensity of the unremitting frost. The lowest line of perpetual snow, under the equator, is, as already stated, 15,744 feet above the level of the sea. In latitude 49° N. it is lowered to 15,040 feet; in latitude 43° to 46° it descends to 8,640 feet, or 908 feet below the level of the city of Quito, at the equator, and no less than 4808 feet, (upwards of three quarters of a mile) lower than the inhabited farm of Antisana, in the same quarter. The city of Mexico, at an elevation of 7472 feet, is in a hot climate, which ripens all the tropical fruits, as pine-apples, oranges, &c.; yet in Sweden, the line of perpetual snow descends to 5184 feet, and in Norway, to 4480 feet: the medium of the two being half a mile below the temperature of the more elevated Mexican territory.

The limits of perpetual snow in different latitudes laid down by M. Humboldt, are as follow:

Under the equator, and thence to 3° N. & S	15,500
At 20° of latitude	12,194
35	11,500
40	10,200
45	8,136
In Switzerland . . .	8,033
On the Pyrenees	7,853

Above 75° of N. latitude at the level of the sea.

General View of the Mountains.

The annexed plate exhibits a comparative view of some of the principal mountains, of which the heights have been ascertained. The summits are numbered for convenience of reference; and the heights are shown by a scale on the left hand, in thousands of feet. In this scale, the line below 1 denotes the level of the sea; the line above the figure represents a perpendicular elevation of 1000 feet. The next line, above 2, indicates 2000 feet; and so of the rest, to the head of the print, when 27,000 feet, or rather more than five miles and a quarter, terminates the scale. By applying a ruler, or a slip of paper, with an even edge, across the print, parallel to the top or bottom, the height of any given mountain may be ascertained, by noting where the ruler or slip cuts the scale. Or to find a point mentioned in the description, lay the ruler on the scale at the number indicative of the given thousand of feet, and it will pass over or near the figure of reference on the mountain. Some places, also, having remarkable elevations, are marked a, b, &c., and may be discovered in the same way.

MOUNTAINS OF ASIA.

THE Asiatic mountains, most of which run in immense chains, may be considered in the following order:

1. The *Poyas* or *Ural* chain, which partly separates Great Tartary from Europe, extending from the source of the river Kara to the northern shore of the Aral lake and branching on the south-east, under different names, till it joins the Altaic range.

2. The *Altai* chain, divided into Great and Little. The Great Altai ranges across Mongolia, and includes mounts Arak, Mousart, and Bogdo; the Little Altai, to the north of the Great chain includes Uluk, Tag,

Bereka, and Savamen mountains, and separates Independant Tartary and Siberia from Minjolia.

3. The *Stanovoi* mountains, which stretch along the north-east extremity of Asia, from lake Baikal.

4. The range of *Caucasus*, of remote fame, extends between the Caspian and Black seas: height of the principal summit, mount Elboors, near the source of the Kuban, 16,800 feet. From these mountains, branches diverge to the south, and connect them with the chain of Mount *Taurus*, which runs from east to west nearly through the whole of Asia Minor. At the eastern extremity of the Tauridian chain, another range extends under various denominations, into Persia, and thence nearly parallel to the northern shores of the Persian gulf.

4. Mount *Ararat*, celebrated as the resting place of Noah's Ark after the Deluge, rises on the Persian frontier, and presents two insulated summits, the highest of which is about 9600 feet in height, and covered with perpetual snow; the lower parts are composed of a deep moving sand. One side presents a vast chasm, tinged with smoke, from which flames have been known to issue.

5. The Mountains of *Libanus*, or *Lebanon*, the most noted chain in Syria, run nearly parallel with the eastern coast of the Mediterranean. The highest points, estimated at 9520 feet in height, are between thirty and forty miles from the shore, and frequently covered with snow. *Anti-Libanus* is a detached chain, of inferior altitude, east of the former.

6. The *Himmaleh*, or *Himalaya* Mountains, *(the abode of snow)* considered as the most stupendous on the globe, separate Hindoostan from Tibet. Among the peaks, that of Kantel, in the province of Lahore is reckoned the highest in the world; but its altitude has not been measured: others have been estimated at from 25,000 to 27,000 feet above the level of the sea. The western part of this chain, which runs through the north of Caubul, is called *Hindoo Koosh*.

7. The *Ghauts*, which run through the Deccan, and terminate at Cape Cormorin.

8. *Horeb* and *Sinai*, two summits of the *Djebel-Moosa*, a mountainous ridge in Arabia Petrea. It was on Mount Sinai that the Almighty made a display of His glory and majesty, in giving laws to His chosen people, Israel.

9. The ridge *El Aredh*, which runs through Arabia.

10. *Adam's Peak*, in the island of Ceylon, estimated at 7000 feet in height.

11. Mount *Ophir*, in the island of Sumatra, situated nearly under the equator, is stated to be 13,842 feet in height; and a volcano to the south of it, is computed to rise 12,465 feet above the level of the sea.

References to the Plate.

Figure of reference.	Mountains.	Situation.	Country, &c.	Height in Eng. feet.
1	Dhawala Giri, or White Mountain, near the sources of the Gundah River	Himalayan Chain.	Tibet.	26,462
2	Jewahir, or Himalay Peak, in the bend of the Sutlej river	Ditto.	Jewahir, nor. of Delhi.	25,749
3	Jamatura, or Jumoutri, on the Sutledga	Ditto.	Malown.	25,500
4	Black Peak ditto	Ditto.	Ditto.	21,155
5	Various Peaks, varying from 23,000 to 24,700ft.	Ditto.	Gurwal & Badunath.	
	A Pass in the Mountains	Ditto.	Tibet.	18,600
6	Budjrai Mountains	Ditto.	Ditto.	7,502
7	Petcha, or Hamar	Honan.	China.	21,000
8	Sochonda Mountains	Ditto.	Ditto.	12,600
9	Melin Mountains	Ditto.	Ditto.	8,200
10	Corea Mountains	Corea.	Ditto.	4,380
11	Parmesan	Isle of Banca.	Chinese Sea.	10,050
12	Moonakoah	Hawaii.	Sandwich Isles.	18,000
13	Libanus, or Lebanon, noted for its Cedars	Syria.	Asiatic Turkey.	9,520
14	Ararat, or Ala-Dagh	Armenia.	Ditto.	9,500
15	Bythinian Olympus, or Keshish-Dagh	Anadolia.	Ditto.	6,481
16	Ida, celebrated for the judgment of Paris	Ditto.	Ditto.	5,800
17	Carmel, the place of Elijah's Appeal	Palestine.	Ditto.	2,200
18	Tabor, or Mount of Transfiguration	Ditto.	Ditto.	2,000
19	Mount Ophir	Isle of Sumatra.	Indian Ocean.	13,842
20	A Volcano, south of Mount Ophir	Ditto.	Ditto.	12,400
21	Italitzkoi	Altaian Chain.	Tartary.	14,735
22	Sea View Hill	Hastings River.	New South Wales.	6,500
23	Bathurst Height	Roxburgh.	Ditto.	1,900
24	Cunningham Mountains		Ditto.	500
25	Awatscha, Volcano	Kamptschatka.	Asiatic Russia.	9,600

MOUNTAINS OF AMERICA.

Next to those of Asia, the mountains of America claim attention from their stupendous elevation and imposing features. Those which form the chain of the Andes, were long supposed to be the highest in the world; but recent observations have transferred this claim to the Himalayan chain, in the eastern hemisphere. The *Cordillera de los Andes* has, however, characteristics of a peculiar kind, calculated to strike the beholder with admiration and terror. Vast cataracts by which the water is precipitated down a perpendicular depth of 600 feet, into dark and frightful gulfs; tremendous volcanoes, in constant activity; some ejecting lava, others discharging vast quantities of boiling water, clay, and sulphur; and immense chasms, between 4000 and 5000 feet in perpendicular descent. Perpetual snow invests the upper parts of the chain, forming a barrier to the animal and vegetable kingdoms. This range is rich in mineral treasures, excepting only lead. This enormous chain runs from north to south through the greater part of the American continent, at a distance from the shores of the Pacific Ocean, varying from 100 to 200 miles. Most of the other mountains are but branches of this range. Its height is not uniform: in some places it rises to upwards of 20,000 feet; in others it sinks to less than 1000. Its breadth is about sixty miles under the equator; about 150 in Mexico, and the same in Peru. In Chili, the breadth is about 120 miles, and the summits rise to a tremendous height. To the north of the isthmus of Panama, it gradually sinks till

it spreads itself into the vast plains of Mexico. The most elevated of its secondary chains stretches along the northern coast of Columbia, with summits from 14,000 to 15,000 feet in altitude. The second of these chains branches from the main ridge between the third and sixth degree of south latitude, and extends towards the east to an unexplored extent, though it has been traced for about 600 miles. A third lateral branch makes a kind of semicircular sweep, and appears to connect the main body of the Andes with the mountains of Brazil and Paraguay, which present features nearly similar. The *Cordillera of Mexico* is considered as a continuation of the Andes of the southern continent; which, notwithstanding its lowness in the isthmus recovers a considerable height in the province of Guatimala, where its ridge is jagged with volcanic cones: these are the *Apacana* Mountains. Farther north, the crest takes the name of *Sierra Madre*, and, gradually expanding in breadth, at last divides into three branches, of which the western is called the *Topian Mountains*. Of these, the *Stony Mountains* and *Rocky Mountains*, which separate the western territory of the United States from Missoury, are a continuation.

The most known of the mountains of North America, are those of the Apalachian or Alleghany chain, which stretches from the south-west of the United States, nearly to the Gulf of St. Lawrence. This surpasses in length any European range, except the Norwegian; but its highest summits do not exceed 3000 or 4000 feet.

Figure of reference.	Mountains.	Situation.	Country, &c.	Height in Eng. feet
	SOUTH AMERICA.			
26	Chimboraço . . highest point of the	Andes.	Quito.	21,464
27	Antisana, Volcano	Ditto.	Ditto.	19,134
28	Cotopaxi, Volcano	Ditto.	Ditto.	18,870
29	Pass in the Mountains . . .	Ditto.	Ditto.	18,600
30	Sangai, or Mecas, Volcano . . .	Ditto.	Ditto.	17,125
31	Sinchulahua	Ditto.	Ditto.	16,300
32	Tunguragua Volcano . . .	Ditto.	Ditto	14,978
33	Imbabura, Volcano, frequently ejecting fish	Ditto.	Ditto.	8,970
34	Sierra Nevada, de Santa Marta . .	Ditto.	Columbia.	15,165
35	Duida, Volcano . . .	Ditto.	Ditto.	8,460
36	Bergantin Mountains . . .	Ditto.	Columbia.	4,400
	WEST INDIES.			
37	Blue Mountains, highest summit, North Peak.		Jamaica.	8,180
38	Souffrière, Volcano		St Vincent's.	5,010
39	Mount Misery		St. Kitt's.	3,710
	NORTH AMERICA.			
40	Peaks of the Topian Ridge . . .		United States	16,300
41	Rocky Mountains		Ditto.	12,500
42	Agiochochook, or White Mountains, visible on Land, at the distance of 80 miles . .	New Hampshire.	Ditto.	7,800
43	Allegany Mountains		Ditto.	3,010
44	Katskill	New York.	Ditto.	3,000
45	Sugarloaf Hill	Arkansas.	Ditto.	1,300
46	Potatoe Hills	Ditto.	Ditto.	700
47	Mount St. Elie	Andes.	Mexico.	18,222
48	Popocatepetl, Volcano . . .	Ditto.	Ditto.	16,365
49	Jorullo, Volcano . . .	Ditto.	Ditto.	4,265

MOUNTAINS OF AFRICA.

AFRICA has some extensive chains of mountains; but the altitudes of only a few have been ascertained. The *Gebel Tedla*, or *Atlas* of the ancients, extends through more than half the breadth of the northern part, and some of its summits, which are covered with perpetual snow, are about 12,050 feet in height. South of the Great Desert, is the *Kong* range, which stretches from Cape Verd to about the fourth or fifth degree of east longitude; but they have never been fully explored. Captain Clapperton, in 1826, crossed a portion of this ridge, above Benin, and thinks the highest part in that quarter did not exceed 2500 feet. On the opposite side of the continent, in parallel latitudes, lies Abyssinia, a country of mountains, among which are *Geesh*, 15,000 feet; *Amid-Amid*, 13,000 feet; and *La Malmon*, 11,200 feet. South-west of this are the *Gebel Kumri*, or *Donga Mountains*, (the *Mountains of the Moon* of the old geographers) which are supposed to extend westward towards the Kong Mountains of Guinea. The *Sierra de Lupata*, on the south-eastern coast, appears to reach from Cape Guardafui to the Cape of Good Hope. In the southern promontory, or that part which may be called British, are three great and almost parallel chains, with numerous branches. The first, or southern range, called *Lange Kloof*, or *Long Pass*, runs parallel to the coast, at a distance varying from twenty to sixty miles widening as it approaches the west. North of this is the second range, called *Zwarte Bergen*, or *Black Mountain*, which runs higher, and is more rugged than the former, and composed, in some places, of double and triple ranges. To the north-west of this, at an interval of 80 to 100 miles, is *Nieuweldt Berg*, the highest chain of Southern Africa. Its summits, upwards of 10,000 feet high, are usually covered with snow. Besides these principal ranges, others diversify the immediate vicinity of the Cape of Good Hope. Behind Cape Town is *Table Mountain*, 3582 feet above the Bay, consisting of a stupendous naked rock, two miles in length. The *Devil's Mountain* on one side, and *False Lion's Head* on the other, are but continuations of the same ridge; the former is an irregular pointed mass, 3315 feet in height; the latter resembles a dome, and is computed to rise 2160 feet.

The African islands have also their remarkable mountains. Madeira consists of a group of mountains, many of volcanic origin, rearing their heads to the height of 5000 feet. In the Canaries is the celebrated *Peak of Teneriffe*, 12,358 feet high. In the Cape de Verd islands, the *Peak of Fuego* rises 9790 feet. *Diana's Peak*, the loftiest in St. Helena, is nearly 2700 feet in height. Madagascar is intersected through its whole length by a lofty range of mountains, the highest points of which have been estimated at 10,800 feet. The island of Bourbon may be said to consist of two volcanic mountains, of

which the larger one is extinct, but the smaller, towards the south, is still active, and serves as a light-house to mariners: its height is about 7,680 feet. The northern part of the island is more lofty, and here we meet with *Gros Morne*, rising 10,240 feet.

Figure of reference.	Mountains.	Situation.	Country, &c.	Height in Eng. feet.
50	Geesh, highest point	Aniba	Abyssinia	15,050
51	Taranta	Tarante Range.	Ditto.	7,800
52	Peak of Teneriffe	Teneriffe.	Canary Isles.	12,358
53	Ruivo Peak		Madeira.	5,350
54	Diana's Peak	St. Helena	Atlantic Ocean	2,692
55	Nieuweldt	Nieuweldt Bay.	South Africa	10,000
56	Table Mountain	near Cape Town.	Ditto.	3,582
57	Volcano	Isle of Bourbon.		7,680

MOUNTAINS OF EUROPE.

THE most celebrated ranges of mountains in this division of the globe, are: in the north-west the *Scandinavian chain*, sometimes called the *Norwegian Alps*, partly separating Norway from Sweden; in the north-east, the *Uralian Mountains*, which in part form the boundary between Europe and Asia; towards the centre, the *Carpathian range*, in the Austrian dominions; in the south, the *Alps*, between France and Italy; the *Pyrenées*, between France and Spain; and the *Apenines*, which run through the whole length of Italy.

In the Scandinavian, or Koëlen chain, are hills rising more than 7000 feet; which, added to their northern situation, clothes them with perpetual winter, though, in point of elevation, they are inferior to the Pyrenées. Forests of pines clothe their sides to a certain height; and they contain marble, iron, copper, and other useful minerals. They extend above a thousand miles, from north to south. The central and highest point is Sneehättan, which, in latitude 62°, towers like a pyramid to the height of 8120 feet, of which 4000 are above the line of perpetual frost. The northern part of the chain gradually decreases in height, as it approaches the Arctic Ocean. The southern portion sends out branches which cross the broad part of Norway diagonally, in a south-west direction. Here we meet with the Glacier of Sogne-feld, at an elevation of 7861 feet; the hills Folgefond, 7236 feet; Lang-feld, 7217 feet; and others of inferior altitude.

The *Uralian* or *Oural* chain stretches over more than 1200 miles. The natives of its vicinity have bestowed upon it the pompous epithet of *Semenoi Poias*, "The Girdle of the World." Its height, however, is not proportioned to its length, the loftiest summits being generally under 5000 feet. The following points, however, are stated to exceed that average: *Tanagai*, 9000 feet; *Komschefskoi*, 8132 feet; *Pawdinskoi*, 6631 feet. The greater portion of this chain is covered with forests; the central parts abound in minerals and metallic ores; the richest mines are on the Asiatic side.

The *Carpathian* or *Krapac* Mountains extend from the southern point of Silesia, to the north and east of Hungary, sending out branches to Transylvania and Walachia. The whole length of this chain is about 500 miles: its highest summits are from 8000 to 9000 feet; and but few of them attain that elevation. Among the former ones, the *Peak of Lomnitz*, 8870 feet; *Krivan*, near Cremnitz, 8034 feet; *Pietrosz*, in the north-east of Hungary, 7273 feet. These mountains have neither glaciers, nor any feature of perpetual winter; but are clothed with extensive forests, particularly of pines and firs. They contain a variety of minerals.

The Alps, the highest and most celebrated mountains of Europe, derive their name from a Celtic word, signifying *high*. They divide the north of Italy from Germany, France, and Switzerland, stretching like a crescent from the Gulf of Genoa to the head of the Adriatic. The length of the chain is about 600 miles and its breadth, in some places, exceeds 100; the whole comprising various branches, broken into lofty peaks, and divided from each other by narrow valleys and dreadful chasms, several thousand feet deep. In many places the mountains seem like rocks piled upon rocks, till their summits, reaching above the clouds, resemble islands emerging from the ocean. These are from 4000 to 12000 feet above the level of the sea. The most rugged parts of this chain are between Savoy and the Valais, among which, Mont Blanc, the monarch of the group, rears its lofty head to the height of 15735 feet, and is visible at Dijon and Langres, a distance of 140 miles. From these elevations some of the principal rivers of Europe derive their origin, in sources which are often above the clouds. The lower parts of the mountains, generally, abound in woods and pastures remarkable for their fertility. The middle regions are the summer resort of herdsmen and shepherds, with their cattle and flocks: the upper region is chiefly composed of rugged and inaccessible rocks, clad in perpetual snow. Many parts of the middle regions are subject to tremendous snow-storms, which, in a few hours, fill the ravines, destroy the distinction between paths and precipices, cover villages and bury the inhabitants. In summer the thunder bursts with dreadful fury upon these mountains, and is accompanied with violent hail-storms. Among the gentler declivities of the mountains, especially the Swiss portion of them, are lodged immense masses of ice, exhibiting the most fantastic and picturesque forms:—these are the *glaciers*, which resemble so many stormy seas suddenly frozen. Their thickness varies from one to six hundred feet. Among these mountains are the points St. Bernard and St. Gothard, on each of which are an hospital for the accommodation of travellers, and a convent for monks. The convent of St. Bernard (*a*), on the frontier of the Valais, is the highest inhabited spot in Europe, being 8606 feet above the level of the sea; but the mountain rises 2400 feet above this. The convent of St. Gothard (*b*), in the canton of Uri, is at an elevation of 6900, or, according to some computations, 7320 feet, above which the mountain rears its head, covered with eternal snow and ice, 2175 feet.

Next to the Alps in celebrity are the Pyrennees, which extend from the Bay of Biscay to the Mediterranean, forming a natural barrier between France and Spain. The highest peaks are near the middle of the chain, and are about 11000 feet above the sea level. The composition of these mountains differs from that of the Alps, which is solid rock, but the Pyrennees are calcareous, and contain large masses of sea shells and other marine matter. These mountains have their glaciers, and, in common with the Alps, are subject to those vast and destructive descents of snow denominated *avalanches*.

The Apenines branch off from that extremity of the

Alps which verges on the Gulf of Genoa, and extend through the whole of Italy. Various branches extend on either side, but no part of the ridge attains any considerable elevation. The highest point of the Apenines is that of Monte Corno, called Il Sasso Grande, in Abruzzo, 10199 feet: next to this is Monte Vellino, north of Lake Celano, 8397 feet. Il Cimone, in the Duchy of Modena, 6971 feet, is the highest summit of the northern Apenines; it is insulated, and its base is twenty-five miles in circuit.

Besides these principal chains of mountains, there are others of less note in Europe, as the Vosges and Cevennes, in France, the highest of which are about 6000 feet; Jura, between France and Switzerland, averaging the same height; the Sierra Morena, and Calabrian mountains, in Spain, among which last are points rising from 7000 to nearly 10000 feet; and the ridge of the Hæmus, in European Turkey, from 6500 to 7500 feet.

Reference to the Plate.

Fig. of ref.	Mountains.	Situation.	Height in feet.
58	Mont Blanc	Alps.	15,735
59	—— Rosa	Ditto.	15,600
60	—— Cenis	Ditto.	11,785
61	—— St. Bernard	Ditto.	11,006
62	—— Simplon	Ditto.	11,000
63	—— St. Gothard	Ditto.	9,075
64	—— Brenner	Ditto.	5,110
65	—— Chasseral	Jura.	5,260
66	—— Viso	Alps.	12,584
67	—— Il Cimone	Apenines.	6,981
68	Mont Perdu	Pyrenees.	11,209
69	Pic d'Arbizon	Ditto.	8,344
70	Pic de Montaigne	Ditto.	7,310
71	Oertles Spitze	Tyrol.	15,364
72	Mulhacen, in Spain	Sierra Nevada.	11,670
73	Ætna, Volcano		10,963
74	Terglon, in Austria	Carniola.	10,390
75	Panda, in Russia	Oural Chain.	6,780
76	Olympus, reputed seat of Jupiter.	Greece.	6,600
77	Vesuvius, Volcano	Naples.	3,978
78	Hecla, Volcano	Iceland.	3,690
79	Stromboli, Volcano	Lipari Isles.	3,020
80	Vaucluse, the seat of Petrarch's Fountain	France.	2,150
81	Gibraltar, highest summit of the Rock	Andalusia.	1,439
82	Montmartre	Near Paris.	400

MOUNTAINS OF THE BRITISH ISLES.

The mountains of England, if less stupendous than those of the continent, are not inferior for their picturesque beauties. The highest summits are on the west side of the country; and the principality of Wales is properly denominated a mountainous region, though its most lofty summit, Snowdon, does not rise 4000 feet above the sea.

The grand chain of England commences in Cumberland, and extends in a series of groups, rather than a connected range, into Cornwall, only interrupted by the low grounds of Lancashire and Cheshire, and the hollow of the Bristol Channel, by which it is divided into three portions, the Northern, Middle, and Southern ridges. The first of these, rising a little to the south of Carlisle, spreads over a considerable part of Cumberland, Westmoreland, the east of Lancashire, and the west of Yorkshire, with one branch stretching into Derbyshire, and another to the west of Durham. These mountains are of various shapes and forms, generally broken into pointed masses, and united at their bases only. In many cases the peaks are separated by beautiful lakes, as in Cumberland and Westmoreland. The highest of these peaks, called Sea Fell, is 3166 feet, the lowest, named Calf Hill, is 2188 feet above the ocean.

The second, or middle ridge, called the *Cambrian* range, is less rugged, but more towering and massy, than the Northern. The principal part extends towards the south, through Carnarvonshire, Merionethshire, and Cardiganshire, declining in elevation as it passes through the latter county, and approaches the borders of South Wales. The highest summit is Snowdon, which, rising to the altitude of 3571 feet, is the chief of a range composed of various piles heaped one upon another, and surrounded by other points of nearly equal altitude. From Snowdon the chain declines both ways, sinking gradually on the eastern side to the charming scenery of the Shropshire hills, where the Wrekin, rising far above the neighbouring summits, seems, when viewed in perspective, to stand in an elevated plain: its height is 1320 feet. The range continues nearly south to Cardiff, sometimes diverging towards the west, and, though deprived of much of its Alpine character, still preserving enough of it to render the country mountainous. Like the northern part, it declines towards the east, and forms the hills of Hereford.

The third, or Devonian range, is separated from the Cambrian by the Bristol Channel, and extends through parts of Gloucestershire, Wiltshire, Somersetshire, Devonshire, and thence to the Land's End, in Cornwall. This division is much inferior in height to either of the former; its greatest altitude being the mountains of Dartmoor, and its most elevated points in that quarter are Cawsand Beacon, 1792 feet, and Pippin Tor, 1549 feet. In Cornwall the two highest summits are Brown Willy, 1368 feet, and Cavraton Hill, 1,208 feet. The Malvern Hills, rising from the vale of the Severn, run through Worcestershire and part of Gloucestershire, sending branches into Herefordshire, but they do not attain an elevation of 1,500 feet. In the same neighbourhood are the Cotswold and Stroudwater Hills, extending over more than 300 square miles.

Hampshire and Sussex are diversified with a range of chalk ridges, called Downs, nearly fifty miles in length, and from five to ten miles broad. Another ridge runs through Surrey and Kent, and the Chiltern Hills form an upland tract in the counties of Hertford, Buckingham, and Oxford.

In Scotland the mountains rise, in some places, to a greater height than in England. The *Grampian Hills*, stretching westward from Aberdeenshire to the Atlantic, constitute the southern boundary of the Highlands. They are composed of various groups generally rising from 1500 to more than 4000 feet above the sea level. In the western part of this chain are Ben Nevis, the highest mountain of Great Britain, with its snow-capped head, 4358 feet; Ben Lawers, 3978 feet; Ben More, 3844 feet; Schehallien, 3673 feet; Cruacken-ben, 3390 feet; and Ben Lomond, 3240 feet. The *Pentland Hills*, south of Edinburgh, are more remarkable for picturesque scenery than mountainous features; their greatest altitude is about 1750 feet. The *Cheviot Hills*, constitute part of the boundary between Scotland and England: they are connected, at the south-west extremity, with the *Lead Hills*, a range which stretches westward from the borders of the two countries, and of which the principal summit is Hart Fell, nearly 3300 feet in height.

In the north of Scotland the mountains seldom

assume the character of regular ranges or groups. They frequently consist of detached hills, separated by narrow glens. Ben Wyvis, in Ross-shire, rises to the height of 3720 feet, and, with some others in the same district, is generally topped with snow. The highest summits of the ridge which separates the south-east of Caithness from Sutherland, and terminates at Ord Head, called by sailors the Paps of Caithness, rise from 1250 to 1930 feet.

Many of the mountains in the isle of Skye are computed at 3000 feet above the level of the sea; and in the isle of Jura, which is itself a mountain, some of the hills, called Paps of Jura, are more than 2400 feet.

Ireland, though, generally speaking, a flat country, is not entirely without its mountainous regions. Wicklow consists of an assemblage of mountains, connected with a ridge which divides Wexford from that county and Carlow. Among the Wicklow mountains are—Lugnaguilla, 3070 feet; Kippure, 2527 feet; Djouca, 2392 feet; Cadeen, 2158 feet; Sneechon, 2150 feet. The eastern coast of Donegal, likewise, presents a mountainous appearance, and a chain runs inland from Tillen Head. Mangerton, a peak in the chain, south-west of the Lake of Killarney, is 2693 feet high; and Slieve Donnard, the highest summit of the Mourne mountains, in the county of Down, is 2786 feet. In the county of Kerry is a ridge called M'Gillicuddy's Rocks; the highest point of which is supposed to exceed 3000 feet. Some of the detached mountains are of a great height: such as Mount Nephin, in Mayo, 2630 feet; and Croagh Patrick, on the south-East of Clew Bay, 2640 feet.

Fig. of ref.	Mountains.	Situation.	Height in feet.
83	Ben Nevis	Inverness-shire.	4358
84	Cairn Gorm	Banffshire.	4080
85	Snowdon	Caernarvonshire.	3571
86	Ben Lomond	Stirlingshire.	3240
87	Helvellin	Cumberland.	3055
88	Skiddaw	Ditto.	3022
89	Ben Ledi	Perthshire.	3009
90	Cader Idris	Merionethshire.	2914
91	Brecknock Beacon	Brecknockshire.	2863
92	Cheviot Hills	Northumberland	2658
93	Paps of Jura	Isle of Jura.	2470
94	Plynlimmon	Cardiganshire.	2463
95	Pentland Hills	Edinburghshire.	1750
96	Malvern Hills	Worcestershire.	1444
97	Arthur's Seat	Edinburghshire.	822
98	Beechy Head	Sussex.	564
99	Dover Castle	Kent.	469
100	Shooter's Hill	Ditto.	446
101	Greenwich Observatory	Ditto.	214
102	Goat Fell	Isle of Arran.	2945
103	Snea Fell	Ise of Man.	2004

The following remarkable elevations have been introduced upon the plate, as a practical elucidation of the descriptive part of this Essay, by means of comparison.

Let. of ref.		Height in feet.
a	Convent of St. Bernard (above the line of snow)	8,606
b	Convent of St. Gothard	6,900
c	Lake Lucon, in Switzerland	6,220
d	Lake of Lucerne, ditto	1,380
	Lake of Geneva ditto	1,207
	Line of Perpetual Snow in Scotland	3,750
e	Edinburgh City	443
f	London, St. Paul's Cathedral	400
g	Daba, near the source of the Sutledj, in Tibet	15,700
h	Manasaroca Lake, in Tibet	14,500
i	Milum Temple, near the source of the Ganges	13,000
k	Highest Flight of the Condor on the Andes	21,000
l	Ascent of Gay Lussac, at Paris, in 1804, the greatest height ever attained by a Balloon	22,900
m	Longwood House, St. Helena	2,000
n	Pyramids of Egypt	475
o	Greatest Altitude attained by Messrs. Humboldt and Bonpland, on Chimboraço, in 1802	19,400
p	Farm of Antisana, the highest inhabited spot on the Andes	13,435
q	Greatest altitude of pines in the torrid zone	12,800
	Ditto of trees, the pine excepted	11,100
r	Ditto of oaks	10,500
s	Quito, city of, in S. America	9,630
t	Mine of Real del Monte, in Mexico	9,120
v	Falls of Niagara, in N. America	700
u	Highest growth of Peruvian bark	9,590
x	City of Mexico	7,520

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